



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICANT: FIELDING, VICTOR )  
)  
Application No.: 10/072,197 )  
)  
Filing Date: 02/07/02 )  
)  
For: SELF COMPENSATING AMPLIFIER AND )  
DRIVER FOR BROADCAST DATA RECEIVER )  
)  
Art Unit: 2817 )

TRANSMITTAL OF PRIORITY DOCUMENT

Director for Patents and Trademarks  
Washington, D.C. 20231

Dear Sir:

Enclosed herewith is a certified copy of British Patent Application No. 0103082.4  
for which the above-identified patent application claims priority from.


If, for any reason, this priority document is not acceptable, please inform the  
undersigned as soon as possible.

Respectfully Submitted:

HEAD, JOHNSON & KACHIGIAN

Date: 03/15/02

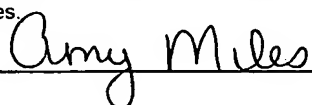
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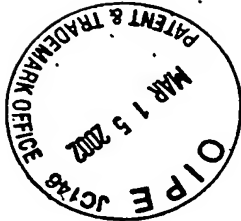
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INVESTOR IN PEOPLE

The Patent Office  
Concept House  
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I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

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Signed

Dated 8 February 2002



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NEWPORT

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P01/7700 0.00-0103082.4

# Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

The Patent Office

Cardiff Road  
Newport

Gwent NP9 1RH

1. Your reference	GW-G30841
2. Patent application number (The Patent Office will fill in this part)	0103082.4
3. Full name, address and postcode of the or of each applicant (underline all surnames)	08 FEB 2001
	Pace Micro Technology Plc
	Victoria Road Saltaire Shipley BD18 3LF
Patents ADP number (if you know it)	
If the applicant is a corporate body, give the country/state of its incorporation	England
	7588569 001
4. Title of the invention	Self Compensating Amplifier and Driver
5. Name of your agent (if you have one)	Bailey Walsh & Co.
"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)	5, York Place Leeds LS1 2SD
Patents ADP number (if you know it)	224001
6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number	Country Priority application number (if you know it) Date of filing (day / month / years)
7. If this application is divided or otherwise derived from an earlier UK application, the earlier application	Number of earlier application Date of filing (day / month / years)
8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer "Yes" if:	Yes
a) any applicant named in part 3 is not an inventor, or	
b) there is an inventor who is not named as an applicant, or	
c) any named applicant is a corporate body	
See note (d)	

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Continuation sheets of this form

Description 4

Claim(s)

Abstract

Drawing(s) 1 + 1

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10. If you are also filing any of the following, state how many of each item.

Priority Documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (Please specify)

11. I/We request the grant of a patent on the basis of this application

Signature

Date

B. W. T. Co.

07.02.01

12. Name and daytime telephone number of person to contact in the United Kingdom

G Wood  
0113 2433824

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### Notes

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- Write your answers in capital letters using black ink or you may type them.
- If there is not enough space for all the relevant details on any part of this form, please continue on a separate sheet of paper and write "see continuation sheet" in the relevant part(s). Any continuation sheet should be attached to this form.
- If you have answered 'Yes' Patents Form 7/77 will need to be filed.
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- For details of the fee and ways to pay, please contact the Patent Office.

## Self Compensating Amplifier and Driver

The invention which is the subject of this application relates to improvements to the operation of broadcast data receivers and, in particular, to the provision of amplifiers and drivers therefor.

In a broadcast data receiver there is received a number of data streams, one of which is a video signal carrying video data. Said signal is typically carried at between 0 to 1 volts. The broadcast data receiver itself is provided to receive video data, audio data and auxiliary data, and allow the processing of the same so as to allow generation of video, audio and/or auxiliary displays on a display screen and speakers connected thereto. Typically provided within the broadcast data receiver are amplifiers such as simple discreet amplifiers. However, for the same to be able to receive the video signal at between 0 to 1 volt, a DC offset is required to be introduced to the amplifiers to bias the same on the input transistor.

In practise, it is found that the introduction of the DC offset means that any offset voltage is amplified by the gain of the amplifier and hence appears as an amplified DC offset on the output of the same which is undesirable. Furthermore, the operating temperature of these components can change through time and in different environments and so any temperature change effects tends to be amplified, and appears as a further DC offset on the output of the amplifier which again is a problem in the operation of this form of apparatus.

Conventionally, attempts to solve the problem have foundered in that while a particular circuit or DC supply arrangement may solve a particular problem at particular temperatures, if the operating condition changes then the previous solution may not

prove to be a solution in the new operating conditions and in some instances may in fact be a further disadvantage.

Thus, to date, this type of problem has been regarded as being something which has to be tolerated but the aim of the present invention is to provide a solution to these problems and furthermore, to provide a solution which is adapted in that changes in operating conditions of the components can be taken into account.

In a first aspect of the invention, there is provided apparatus for receiving a video signal from video encoder, said video signal provided within a voltage range and wherein said voltage signal is required to be connected to at least one amplifier requiring a DC offset to bias on the input transistor and wherein there is provided a video amplifier and driver circuit which allows compensation in operation due to changes in operating conditions.

In one embodiment, changes in operating temperature and/or amplification of a bias voltage can be taken into account and, used in the subsequent compensation of the circuit of the invention to provide a DC offset at the input transistor of required value.

A specific embodiment of the invention is now described with reference to the accompanying drawing, which shows one possible embodiment of a self compensating circuit in accordance with the invention.

The circuit illustrates a supply typically + and -5 volts in connection with an input which in turn leads, through the self compensating circuit, to outputs 1 and 2. Referring to the circuit diagram, if the values of  $R6 =$  the value of  $R7$ , then  $Q1B$ ,



R5, R6, R7 and Q2 are used to form a x2 (6db) DC amplifier. This amplifier amplifies the voltage at the Q1B emitter which in turn is referenced to the negative supply by a factor of 2.

The resistors R1, R2, R4 and Q1A act to form a constant current supply that provides a constant voltage drop across the resistor R3 and, although constant, the value of the same is dependent upon the current flowing through it.

In practise, if  $R3 = R4$  then any change in the Q1A  $V_{be}$  is passed onto R3 to compensate for changes in Q1B's  $V_{be}$ .

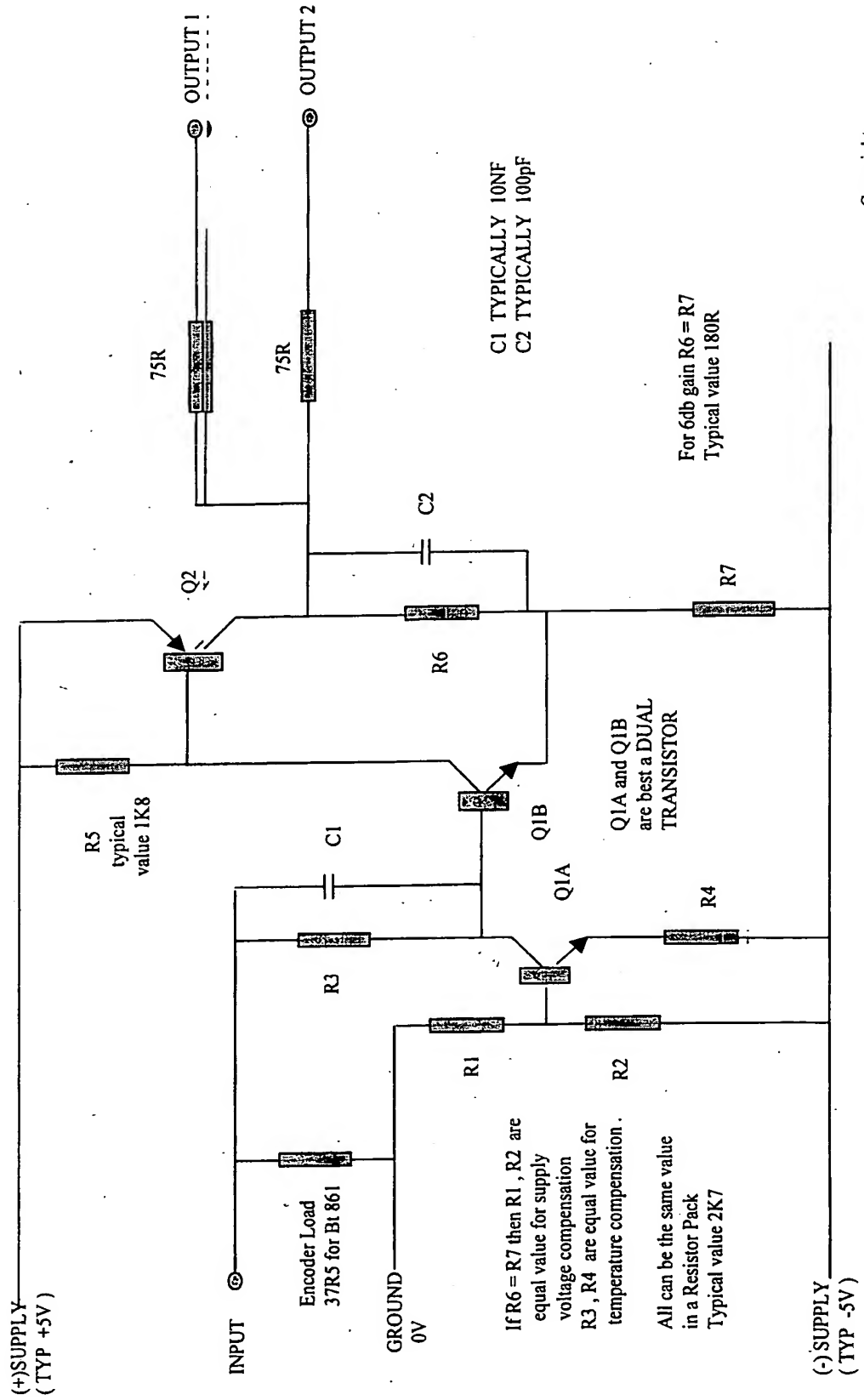
If  $R1 = R2$  then the voltage across R4 will have a value which is half of the negative supply less the  $V_{be}$  value for Q1A.

If a low impedance video signal is applied to R3, it will appear at the base of Q1B however will have a DC shift added which is equal in magnitude to that across R4. Thus, in practise, when this combined signal is applied to the base of Q1B the signal that appears at the emitter of Q1B is in fact the video signal. However, the video signal is offset by half of the value of the negative supply voltage and so the x2 gain which is produced serves to amplify the signal to bring the DC component to ground level and also serves to amplify the video signal by 2. The capacitors C1, C2 positioned across R3 and R6 respectively are there to provide frequency compensation.

Thus, it will be seen from this invention and the specific example of the same, that the circuit which is provided allows self compensation of the values dependent on the values of voltage and temperature which are entering the circuit at any one time.

It may also be possible in one embodiment to include an additional resistor at the position of R3 to overcome any negative outputs which are experienced. The provision of the self compensating circuit allows relatively simple video amplifiers to be used and the problems conventionally associated with such use to be overcome.

# SIMPLE SELF COMPENSATING VIDEO AMPLIFIER AND DRIVER CIRCUIT



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